REMARKS

Reconsideration of pending claims 1 – 8 and 10 – 37 is requested. Applicants thank Examiner Fletcher for the opportunity to discuss this application during the interview of May 30th 2007. Claim charts are discussed below and if for any reason the Examiner would like to discuss the support for a claim element found in United States patent 5,334,876, he is encouraged to call the undersigned attorney.

Claim 1 features apparatus for controlling motion of a motor driven element in a vehicle over a range of motion and for altering that motion when undesirable resistance to motion is encountered. A sensor measures a parameter of a motor coupled to the motor driven element that varies in response to a resistance to motion during all or part of a range of motion of the motor driven element. A memory is used to store a number of measurement values from the sensor based on immediate past measurements of the parameter over at least a portion of a present path of travel of the motor driven element through its range of motion. A controller coupled to the memory determines whether to de-activate the motor based on a most recent sensor measurement of the parameter and the immediate past measurement values stored in the memory as the motor driven element moves over its range of motion. A controller interface coupled to the motor alters motion of the motor driven element in response to a determination made by the controller.

In determining patentability, the United States Supreme Court's decision in KSR Int'l Co v. Teleflex Inc. 127 S. Ct. 1727, 82 USPQ.2d 1385 (2007) has recently reaffirmed the tests for patentability under section 103 (the only basis for rejection presently asserted by the Examiner) as stated in Graham v. John Deere Co. of Kansas City, 383 U.S. 1 (1966):

"Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary

considerations as commercial success, long felt but unsolved needs, failure of others, *etc.*, might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." Deere, 383 U.S. at 17-18.

The controller featured in claim 1 performs its collision detection based on real time data obtained during a present run of the window or panel. Unlike the invention featured in claim 1, the Jones *et al.* system disclosed in U.S. Patent No.: 4,831,509 uses training data stored by the controller during a training run to signal a collision between a door and an obstacle and therefore neither anticipates nor renders obvious the structure of claim 1. This lack of teaching was acknowledged by the Examiner in the last office action wherein the Examiner states "Jones does not disclose that the motor driven element is in a vehicle. Jones *et al.* does not disclose immediate past measurements." *See also* the interview summary record of the May 30th, 2007 patent office interview.

The Office action dated April 10, 2007 rejected claim 1 under 35 U.S.C §103(a) as being unpatentable over Jones *et al.* U.S. Patent No.: 4,831,509 in view of Wrenbeck *et al.* U.S. Patent No.: 5,436,539 having a filing date of August 30, 1993. Note, as asserted and accepted in the response filed May 31, 2006, the original pending independent claims are all supported by the specification of the parent application having a filing date of April 22, 1992 now U.S. Patent No.: 5,334,876 (hereinafter the '876 Patent) from which this application claims priority. Since claim 1 was amended subsequent to the May 31, 2006 amendment, a claim chart showing support in the '876 patent specification (referring to column and line numbers) is presented below.

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN 5,334,876 PATENT
1	Apparatus for controlling motion of a motor driven element (1A) in a vehicle over a range of motion and for altering said motion (1B) when undesirable resistance to said motion is encountered (1C), said apparatus comprising:	1A. Window or Panel Col. 2, Line 40; 1B. Range of Motion Col. 5, Lines 60 – Col. 6, Line 9; 1C. Motor de-energized Col. 6, Lines 65-66.
1(a)	a) a sensor (1D) for measuring a parameter of a motor coupled to the motor driven element that varies in response to a resistance to motion during all or part of a range of motion of the motor driven element;	1D. Op-amp 110, Col. 5, Line 19
1(b)	a memory (1E) for storing a number of measurements values from the sensor based on immediate past measurements of said parameter over at least a portion of a present traversal (1F) of said motor driven element through said range of motion	1E. Control Circuit with memory that compares sensed motor current with calibrated current Col. 1, Lines 65-66 -- see also Col. 6, Lines 20-24 1F. col 6, line 46-63
1(c)	a controller (1G) coupled to the memory for determining to de-activate the motor based on a most recent sensor measurement of the parameter and the immediate past measurement values stored in the memory as the motor driven element moves over its range of motion	1G. Control circuit determines 'compare value' at col 6, line 62 and the motor is de-energized if presently sensed current is greater than the 'compare value', col 6, line 64-66.
1(d)	d) a controller interface (1H) coupled to the motor for altering motion of said motor driven element in response to a determination made by the controller.	1H. Field effect transistor 20 Col. 2, Line 53.

35 USC § 102(e) states that a person shall be entitled to a patent unless "the invention was described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language." For purposes of citation against applicants' claims, therefore, the effective date of the Wrenbeck *et al.* '539 patent is its filing date, *i.e.* August 30, 1993. This date is well after the filing date of April 22, 1992 of the '876 patent and therefore Wrenbeck *et al.* cannot be used in combination with Jones *et al.* to reject the subject matter of claim 1. Subject to confirmation of support for the elements of claim 1 in the '876 patent specification, Examiner Fletcher agreed with this position during the May 30, 2007 interview.

Close scrutiny of the Wrenbeck patent specification indicates that even if the Examiner is of the opinion Wrenbeck is citable as prior art, the combination of Wrenbeck with Jones *et al.* does not suggest applicants' invention featured in claim 1.

The April 10, 2007 office action cites Wrenbeck to cure the deficiencies of Jones *et al.* Applicants fail to find, however, any teaching or suggestion in Wrenbeck in which a memory is provided for storing a number of measurement values from a sensor based on immediate past measurements. Accordingly, the rejection based on the combination of Jones *et al.* and Wrenbeck is traversed on a second independent basis.

The April 10, 2007 office action particularly states that Wrenbeck includes "a memory (MEM) for storing a number of measurement values from the sensor based on immediate past measurements of said parameter over at least a portion of a present traversal of said motor driven element through said range of motion" citing the Wrenbeck abstract and col 3, line 51 – 59. *See* office action at page 7. However, Wrenbeck is replete with comparisons being made against a "stored value". *See e.g.*,

abstract; col 3, lines 56-57, col 4, lines 54-55; col 4, lines 62-64, col 5, lines 20-21, col 5, lines 25-26, and col 5, lines 49-50. The stored value in the memory of Wrenbeck is not from measurements values obtained from the sensor based on immediate past measurements as featured in claim 1. Wrenbeck only modifies the stored value COUNTS at the end of a complete window cycle. *See*, col 4, lines 30-36. As such, Wrenbeck clearly fails to remedy the admitted deficiency of Jones *et al.* and claim 1 is allowable for this additional reason.

Claim 2 features a method for controlling motion of a *motor driven element in a vehicle* over a range of motion and for altering the motion when undesirable resistance to the motion is encountered. The method is performed by *measuring a parameter of a motor coupled to the motor driven element* that varies in response to a resistance to motion during all or part of a range of motion of the motor driven element by taking a multiplicity of measurements as the motor moves the motor driven element over its range of motion. A number of measurement values are stored based on measurements of the motor parameter over at least a portion of its range of motion. If the parameter is determined to be outside a parameter range based on previous stored measurement values as the motor driven element moves over its range of motion, the method of claim 2 alters motion of said motor driven element.

Claim 2 was rejected in the last office action as being obvious in view of the combined teaching of US Jones *et al.* (US 4,831,509) and Wrenbeck *et al.* (US 5,436,539). Claim 2 is original and the Examiner has already agreed that claim 2 is entitled to benefit of the April 22, 1992 priority date. (Note, response to May 31, 2006 amendment.)

Claim 2 remains in its original form as filed and as indicated in the chart below finds support dating back to April 22, 1992 in the '876 Patent from which priority is claimed.

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN 5,334,876 PATENT
2	A method for controlling motion of a motor driven element (2A) in a vehicle over a range of motion (2B) and for altering said motion when undesirable resistance to said motion is encountered (2C), said method comprising:	2A. Window or Panel Col. 2, Line 40; 2B. Range of Motion Col. 5, Lines 60 – Col. 6, Line 9; 2C. Motor de-energized Col. 6, Lines 65-66.
2(a)	a) measuring a parameter (2D) of a motor (2E) coupled to the motor driven element that varies in response to a resistance to motion during all or part of a range of motion of the motor driven element (2F) by taking a multiplicity of measurements (2G) as the motor moves the motor driven element over its range of motion;	2D. Voltage drop corresponds to current, Col. 5, Lines 15-16; 2E. motor 12, Col. 5, Line 14; 2F. current used to sense obstruction Col. 6, Lines 36-40; 2G. current measured every two milliseconds Col. 6, Line 24;
2(b)	b) storing a number of measurement values (2H) based on measurements of said parameter over at least a portion of said range of motion;	2H. FIFO buffer, Col. 6, Line 50
2(c)	c) determining that (2I) the parameter is outside a parameter range based on previous stored measurement values as the motor driven element moves over its range of motion; and	2I. comparing sensed with compare value from equation Col. 6, Line 64.
2(d)	d) altering motion of said motor driven element in response to a determination that the parameter is outside the parameter range (2J).	2J. Stop motor, Col. 6, Line 65

In the present instance, claim 2 calls for, in part *a motor driven element in a vehicle*. Whether this term is interpreted as a use or a structure, weight must be given to its recitation since it is used again in the claim body, *i.e.* the recitation of the motor driven element is found throughout the claim. Since Jones *et al.* neither shows nor

suggests a motor driven element in a vehicle, this claim is not properly rejected either as being anticipated or rendered obvious by Jones *et al.* Stated another way a *prima facie* basis of rejection is not found in Jones *et al.*

Claim 2 also recites *measuring a parameter of a motor coupled to the motor driven element.* Turning to Jones *et al.*, at column 3, line 7, Jones *et al.* states that "the door curtain position relative to the door opening is obtained from an encoder coupled *to the door drum.* (emphasis added). Pulses are provided to the encoder from optoelectronic sensors appropriately placed or positioned in relation to a set of spinning blades coupled to the drive means for the roller door."

In Jones *et al.* the speed and position of the door increase when lowered due to the added affect of gravity and the speed and position decrease as the door is raised. Jones *et al.* teaches a door position encoder "for providing signals indicative of the position of the door curtain relative to the door opening". Column 1, line 53 of Jones *et al.*, but there is no teaching or suggestion of measuring a parameter of a motor coupled to a motor driven element. By noting that the motor load "is dependent on the position of the door" as a criticism of using motor load monitoring devices, Jones *et al.* explicitly teaches away from measuring a parameter of the motor and using that parameter to determine if the parameter is outside a range as featured in claim 2.

For the foregoing reasons, claim 2 is not anticipated nor rendered obvious in the prior art patent to Jones *et al.* Wrenbeck et al is admittedly not prior art. Claims 3 – 5 depend on allowable claim 2 and are also allowable. Additional claim charts are provided below for the remaining independent claims illustrating the support found in the '876 Patent for those claims.

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE '876 Patent
6	Apparatus for controlling activation of a motor coupled to a motor vehicle window or panel (6A) for moving said window or panel along a travel path (6B) and de-activating the motor if an obstacle is encountered (6C) by the window or panel, said apparatus comprising:	6A. Window or panel, col 2, line 40 6B. Range of motion, col 5, line 60-col 6, line 9 6C. Motor de-energized, col 6, line 66
6(a)	a) a sensor (6D) for sensing movement of the window or panel and providing a sensor output signal related to a speed of movement of the window or panel;	6D. Phase inputs 72, 74 from shaft encoder, col 3, line 44
6(b)	b) a switch (6E) for controllably actuating the motor by providing an energization signal; and	6E. FET 20, or relay 30, 32, Col 2, line 64
6(c)	c) a controller (6F) having an interface coupled to the sensor and the switch for controllably energizing the motor; said controller sensing a collision with an obstruction when power is applied to the controller by:	6F. Controller 22, col 2, line 55
6(c)(i)	i) monitoring movement of the window or panel by monitoring a signal (6G) from the sensor related to the movement of the window or panel;	6G. Position encoder, col 4, line 16 Col 6, line 14, absolute position of the sunroof, and the speed at which the roof is traveling. Col 6, lines 39-40 response time of the algorithm versus the speed of the sunroof.

6(c)(ii)	ii) adjusting (6H) an obstacle detection threshold in real time (6I) based on immediate past measurements of the signal sensed by the sensor to adapt to varying conditions encountered during operation of the window or panel;	6H. after the first 50 ms, col 7 line 28 6I. 50ms – 450 ms, col 7, lines 28-34
6(c)(iii)	iii) identifying a collision (6J) of the window or panel with an obstacle due to a change in the signal from the sensor that is related to a change in movement of the window or panel by comparing a value based on a most recent signal from the sensor with the obstacle detection threshold; and	6J. Controller detects an obstruction using rate of speed of motor, col 7, line 33
6(c)(iv)	iv) outputting a control signal to said switch to deactivate (6K) said motor in response to a sensing of a collision between an obstacle and said window or panel.	6K. Motor re-energized, col 4, line 44

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE '876 patent
12	Apparatus for controlling activation of a motor for moving an object along a travel path (12B) and (12A) de-activating the motor if an obstacle is encountered by the object comprising:	12A. Window panel, col 1, line 44 12B. Obstacle, col 4, line 44
12(a)	a) a movement sensor for (12C) monitoring movement of the object as the motor moves said object along a travel path;	12C. Movement sensor, position encoder, col 4, line 16
12(b)	b) a switch (12D) for controlling energization of the motor with an energization signal; and	12D. Switch relay 30, 32, col 2, line 64

12(c)	c) a controller (12E) including an interface coupled to the switch for controllably energizing the motor and said interface additionally coupling the controller to the movement sensor for monitoring signals from said movement sensor; said controller comprising a stored program that:	12E. Controller 22, col 2, line 55
12(c)(i)	i) determines motor speed of movement from an (12F) output signal from the movement sensor ;	12F. Motor speed, rate of change of pulses, col 3, line 59
12(c)(ii)	ii) calculates an obstacle detect (12G) threshold based on motor speed of movement detected during a present run of said motor driven element ;	12G. Obstacle detect motor speed, col 7, line 33
12(c)(iii)	iii) compares a value based on (12H) currently sensed motor speed of movement with the obstacle detect threshold; and	12H. Col 7, line 33
12(c)(iv)	iv) outputs a signal from the interface (12I) to said switch for stopping the motor (12J) if the comparison based on currently sensed motor movement indicates the object has contacted an obstacle.	12I. Interface, col 4, line 1 12J. Stopping motor, braking effect, col 4, line 13

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE 10/765,487 APPLICATION
19	Apparatus for controlling activation of a motor for moving a window or panel (19A) along a travel path (19B) and de-activating the motor if an obstacle is encountered (19C) by the window or panel comprising:	19A. Window or panel col 2, line 40 19B. Travel path, col 5, line 60-col 6, line 9 19C. De-activating motor, col 6, line 65-66
19(a)	a) a sensor (19D) for sensing movement of a window or panel along a travel path;	19D. Op amp 110, col 5, line 19
19(b)	b) a switch (19E) for controlling energization of the motor with an energization signal; and	19E. FET 20, col 2 line 53
19(c)	c) a controller (19F) coupled to the switch for controllably energizing the motor and having an interface coupling the controller to the sensor and to the switch; said controller comprising decision making logic for:	19F. Controller 22, col 2 line 55
19(c)(i)	i) monitoring a signal from the sensor;	
19(c)(ii)	ii) calculating a real time obstacle detect threshold (19G) based on the signal that is detected during at least one prior period of motor operation during movement along a present or current path of travel of said window or panel;	19G. Equation at col 6, line 62
19(c)(iii)	iii) comparing (19H) a value based on a currently sensed motor parameter with the obstacle detect threshold; and	19H. Comparing, col 6, line 65

19(c)(iv)	iv) stopping movement (19I) of the window or panel by controlling an output to said switch that controls motor energization if the comparison based on a currently sensed motor parameter indicates the window or panel has contacted an obstacle.	19I. Stopping movement, col 6, line 65-66.

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE '876 patent
20	Apparatus for controlling activation of a motor for moving a window or panel (20A) along a travel path (20B) and de-activating the motor if an obstacle is encountered by the window or panel comprising:	20A. Window or panel, col 2, line 40 20B. Range of motion, col 5, line 60-col 6, line 9
20(a)	a) a sensor (20C) for generating speed signals representative of the window or panel speed as the motor moves the window or panel along a travel path;	20C. Encoder, col 4, line 16, col 3, line 44
20(b)	b) an obstacle detection controller (20D) for monitoring at least a part of the travel path of the window or panel for sensing and generating an obstacle detect signal indicating the presence in said travel path of an obstacle to movement of the window or panel;	20D. Controller 22, col 2, line 55
20(c)	c) a switch (20E) coupled to said controller for controlling energization of the motor with an energization signal; and	20E. FET 20, or relay 30, 32 col 2, line 64

20(d)	d) said controller for processing speed signals and obstacle detection signals (20F) and controlling operation of the motor in response to said speed or obstacle detection signals; said controller including:	20F. Preferred controller is microprocessor having central processing unit, col 2, line 55
20(d)(i)	i) a storage (20G) for storing a number of speed signals that vary with motor speed;	20G. Microprocessor 22 has storage for storing speed signals shown in Figure 5, col 3, line 59
20(d)(ii)	ii) a processor (20H) for calculating an obstacle detect threshold based on one or more speed signals stored in said storage obtained in real time (20I) based on immediate past measures of the speed signal sensed by the sensor to adapt to varying conditions encountered during movement along a present path of travel of said window or panel;	20H. Processor 22 20I. 50ms – 450 ms, col 7, lines 28 - 34
20(d)(iii)	iii) a logic unit for making a comparison between a value representing window or panel speed (20J) based on a currently sensed motor speed (20K) with the calculated obstacle detect threshold, and generating a control output if an obstacle is detected based on said comparison; and	20J. Controller outputs controls to ramp up motor speed in controlled fashion col 7, line 30 20K. Sensed speed compared with expected based on controlled output, col7, line 33, 34
20(d)(iv)	iv) an interface (20L) coupled to said switch for changing the state of the switch to stop the motor.	20L. Controller interfaces with FET 20 or relay, col 2, line 65

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE 10/765,487 APPLICATION
28	Apparatus for controlling activation of a motor coupled to a motor vehicle window or panel (28A) for moving said window or panel along a travel path (28B) and de-activating the motor when a predetermined position is encountered (28C) by the window or panel, said apparatus comprising:	28A. Window or panel, col 2, line 40 28B. Path described, col 5, line 60-col 6, line 9 28C. Deactivates at home position, col 5, line 65, col 6, line 1
28(a)	a) a sensor (28D) for sensing movement of the window or panel and providing a sensor output signal related to a position (28E) of the window or panel;	28D. Hall sensor 132, col 5, line 63, and phase inputs 72, 74 from position encoder, col 3 line 44 28E. Home position, open position etc col 5, lines 60-68, col 6, line 1
28(b)	b) a switch for controllably actuating the motor by providing an energization signal (28F); and	28F. FET 20, col 2, line 53
28(c)	c) a controller (28G) having an interface coupled to the sensor (28H) and the switch for controllably energizing the motor; said controller determining the position of the window or panel when power is applied to the controller by:	28G. Controller 22, col 2, line 55 28H. Output from position encoder
28(c)(i)	i) monitoring the position of the window or panel by monitoring the sensor output (28I) signal from the sensor related to the position of the window or panel;	28I. Controller monitors encoder output, col 3, line 44
28(c)(ii)	ii) identifying the position of the window or panel based on the sensor output signal from the sensor; and	

28(c)(iii)	iii) outputting a control signal to said switch to deactivate (28J) said motor in response to a sensing of the predetermined position of said window or panel.	28J. Controller stops the roof at the park, full open and vent positions, col 5, lines 59-col 6, line 9.

CLAIM NO.	CLAIM LANGUAGE	SUPPORT IN THE 10/765,487 APPLICATION
33	Apparatus for controlling activation of a motor for moving a motor driven element in a vehicle (33A) over a range of motion (33B) and de-activating (33C) the motor when undesirable resistance to motion of the element is encountered, the apparatus comprising:	33A. Window or panel, col 2, line 40 33B. Range of motion, col 5, line 60-col 6, line 9 33C. De-activating motor, col 6, lines 65-66
33(a)	a) a sensor (33D) for sensing a speed of the motor and generating an output signal representative of a speed of the motor, a speed of the motor changing when undesirable resistance to motion of the element is encountered;	33D. Shaft encoder, col 3, line 44
33(b)	b) a switch (33E) for controlling activation of the motor; and	33E. FET 20, col 2, line 53
33(c)	c) a controller (33F) coupled to the sensor and the switch, the controller receiving the sensor output signal from the sensor and outputting a control signal to the switch to de-activate the motor if the sensor output signal indicates that the element has encountered undesirable resistance to motion.	33F. Controller 22, col 2, line 55

As mentioned in the interview, independent claims 1,6,12,19, and 20 claim use of immediate past measurements and since there is support for those claims (as indicated by the above claim charts), they along with their dependent claims are allowable.

Independent claims 2, 28, and 33 do not include the immediate past measurement limitation. Those claims are supported by the specification of the '876 patent, however, and therefore are not rejectable over the combination of Jones *et al.* and Wrenbeck. Those claims along with their dependent claims are therefore allowable.

All claims are believed to be in condition for allowance and prompt issuance of a Notice of Allowance is respectfully requested. If any fees are determined to be due, the commissioner is authorized to charge those fees to deposit account no 20-0090.

Respectfully submitted,

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